



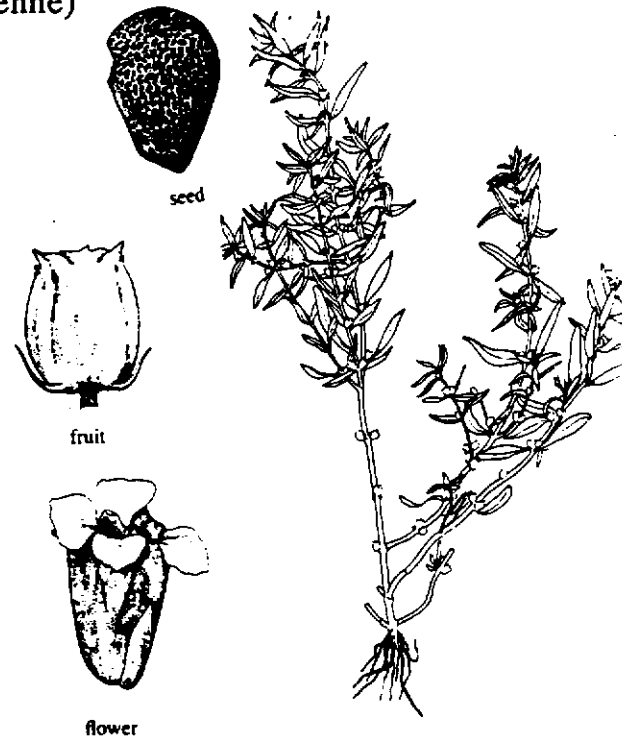
Natural Heritage & Endangered Species Program

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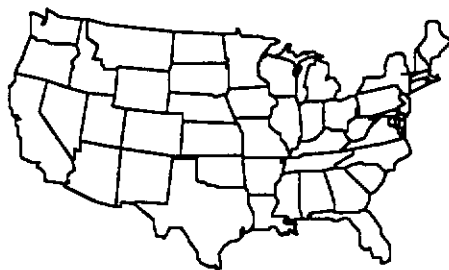
MASSACHUSETTS ENDANGERED PLANTS

Toothcup (Rotala ramosior (L.) Koehne)

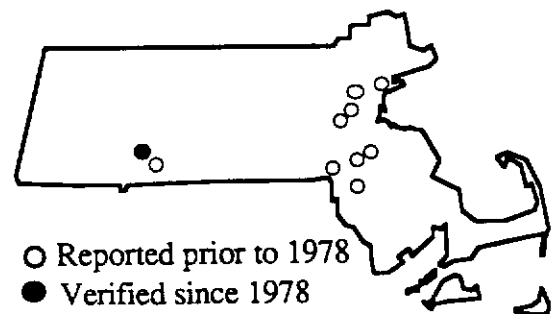
Description: Toothcup is a small, wetland herb belonging to the Loosestrife family and is the only species of the genus Rotala found in the Northeast. This delicate, inconspicuous annual is smooth, diffusely branched and only 6 inches high, with upright stems that become semi-reclining later in the season. The closely spaced, oppositely paired leaves are narrowly lance-shaped or linear, smooth-edged, and taper at the base to short petioles (leafstalks) without stipules (small, leaf-like growths). Leaf dimensions average 1-3 cm (2/5-1 1/5 in.) long and 1-6 mm (up to 1/4 in.) broad but inland and in the West larger leaved forms are more common. In late Summer, from the majority of the leaf axils appears a single, tiny (about 2 mm), stalkless (sessile) flower, which blooms for only a brief period, but nevertheless is distinctive. The flower parts are minute and attached to the rim of a hemispherical or squarish floral tube (hypanthium). There are four translucent, crumpled, pinkish white petals; four slightly smaller, tooth-like lobes of the calyx (the outer, commonly green parts of the flower); and between the calyx lobes, four similar, but more triangular green appendages. Two bracteoles (small, modified leaves) on opposite sides of the base of the floral tube are also diagnostic of Toothcup. The fruit is a many-seeded, four-chambered capsule 2-4 mm by 2mm, enclosed by the floral tube at maturity. In early Autumn the stems and capsules turn bright deep red and are very conspicuous, even long after the leaves have completely dropped. This is when Toothcup inventories are most effective.



From R. Godfrey & J. Wooten, Aquatic & Wetland Plants of the S.E. U.S. 1981.



Range of Toothcup



Distribution in Massachusetts by Town

Similar Species

When not in fruit, Toothcup may be easily overlooked due to its small size and inconspicuous appearance. There is, however, only one species in Massachusetts which bears a superficial resemblance to Toothcup, Ludwigia palustris (Water Purslane), which differs by the absence of appendages between the calyx teeth, by fusion of the calyx tube to the ovary, and by much broader, elliptical leaves. Furthermore, Water Purslane normally grows prostrate.

Range

Toothcup is found over a wide geographical range that extends from its northeastern limit in Massachusetts, south to Florida and continuing to the West Indies, Central and South America. Inland it reaches to Minnesota, Arkansas, Oklahoma and Texas. Another distribution center occurs in the Pacific Northwest from British Columbia to n. Mexico. Toothcup has apparently suffered a decline or was always scarce in the northern part of its range. It is listed as rare by 16 states: Arizona, Colorado, Connecticut, Delaware, Iowa, Illinois, Massachusetts, Missouri, Michigan, Minnesota, Montana, New Jersey, New York, Pennsylvania, Rhode Island, and West Virginia.

Habitat in Massachusetts

In Massachusetts, Toothcup historically occurred on the exposed shores of freshwater lakes and ponds similar to Coastal Plain ponds. At its present Massachusetts site it is abundant at natural ponds and pondlets dissected by dikes and maintained as a water supply. The plants are interspersed among gravel or cobble stones in the sandy to peaty substrate of the mid-shore zone where it experiences changing water levels from seasonal flooding. This may indicate that at some stage of its life cycle it requires a draw-down of the water table to dry-out the substrate. Associated with Toothcup are Panicum rigidulum (Stiff Panic-grass), Agrostis scabra (Ticklegrass), Leersia oryzoides (Rice Cutgrass), Fimbristylis autumnalis (Autumn Fimbry), Juncus pelocarpus (Pondshore Rush), Cyperus dentatus (Bulblet Umbrella-Sedge), Lindernia dubia (False Pimpernel), and Hemicarpha micrantha, a rare sedge. Many of these are Coastal Plain Pondshore species. In other states habitat for Toothcup is more varied: moist meadows and weedy fields; wet open swales, pools, ditches, and tanks; and in Michigan, dried-out, recently burned-over marshes.

Population Status

Toothcup is listed in Massachusetts as an endangered species, with only one current site in the state (since 1978). In some states it has only recently been discovered for the first time and continued searches for Toothcup in new areas throughout its range are expected to uncover new populations. In Massachusetts, on the other hand, historical occurrences of Toothcup are well-documented (10 historical sites), indicating that earlier botanists were aware of its presence and actively searched for it. Recent searches at its historical sites have shown this species to be extirpated from much of its former habitat and other potentially suitable habitats do not seem to support this species either. In most cases its decline in Massachusetts is clearly a result of recreational, commercial, and residential development.